

The Mining Journal,

RAILWAY AND COMMERCIAL GAZETTE.

No. 3147.—VOL. LXV.

LONDON, SATURDAY, DECEMBER 14, 1895.

PRICE (WITH THE JOURNAL) SIXPENCE.
BY POST, £1 4s. PER ANNUM.

THE ZEEHAN AND DUNDAS SILVER FIELD, TASMANIA.

By W. F. A. THOMAS.

(Concluded from page 2 of Supplement for November 30.)

THE following table is compiled from the assays of large parcels of ore sampled at different times, to show the loss in silver that invariably occurs when the ore is sluiced or milled in any way.

Description of Machinery used.	Loss of Silver in unit of Lead.		Proportion of Silver to Lead.		Assays.		Locality of Ore.
	May Bros' plant at the Silver Queen.	May Bros' plant at Mount Zeehan.	May Bros' plant at the Silver Queen.	May Bros' plant at Grubb's.	Green's plant at British Zeehan.	Green's plant at the New Tasmanian.	
	0.564	0.258	1.157	1.333	100	75	1. Silver Queen Co., "Chalmers' Tribute"
	0.42	0.203	1.225	1.264	67	68	2. Ditto, "Truscott's Tribute"
	0.31	0.18	1.237	1.052	72	76	3. Ditto, "Hosking's Tribute"
	0.465	0.272	1.197	0.942	73	63	4. Ditto, "Smith's Section"
	0.398	0.315	1.237	0.942	73	63	5. Silver Queen Co., "Hosking's Tribute"
	0.302	0.302	1.237	0.942	73	63	6. Ditto, "Morewick's Tribute"
	0.352	0.352	1.237	0.942	73	63	7. Ditto, "Chalmers' Tribute"
	0.005	0.18	1.333	1.264	75	68	8. Grubb's Mine
	0.01	0.31	1.237	1.052	73	63	9. British Zeehan Co., "Lea and McKay's Tribute"
	0.275	0.275	1.237	1.052	73	63	10. Silver Queen Co., "Clark's Tribute"
			1.237	1.052	73	63	11. New Tasmanian Co.
			1.237	1.052	73	63	12. Queen Extended Co., "Webber's Tribute"
			1.237	1.052	73	63	13. British Zeehan Co., "Lea and McKay's Tribute"
			1.237	1.052	73	63	14. Ditto, "Long's Tribute"
			1.237	1.052	73	63	15. Silver King Co., "Fisher's Tribute"
			1.237	1.052	73	63	16. Silver Bell Co., "Tributor's"
			1.237	1.052	73	63	17. Silver Bell Co., "Tributor's"

The first thing to be noted from this table is the fact that a certain loss of silver invariably occurs; further, that this loss varies—1, with the mode of treatment; 2, with the character of the ore.

1. In this connection the table shows that there is less loss when the ore is hand-jigged than when it is concentrated by machinery. The inference follows that this is due to the fact that the hand-jigged ore is not crushed after leaving the picking, whereas, in the mills cited, it is all crushed more or less, and the finer the crushing the more is any fine silver ore, which may be occluded in the galena, liberated and floats away. This is, therefore, an additional argument, if such were still needed, for not crushing any finer in concentrating mills than is absolutely necessary to separate the galena.

Another fact made apparent—namely, that the higher the concentration the greater the loss—shows that more silver is lost the concentration is carried up to (say) 70 per cent. lead, than if it is only taken to (say) 60 per cent., and that very complete concentration is hence not desirable.

2. Presuming again that the silver loss is due to the existence

of fine silver ore in the galena, additional argument for it is found in the fact shown by the table that the loss varies with different classes of ore, as different ores would naturally contain varying quantities of silver thus occluded. For example, Nos. 16 and 17, both ores from the same lode, evidently contain a great quantity of these silver ores, as the loss even by hand-jigging is very great. On the other hand, No. 13 can contain but very little.

The fact that the loss of silver in crushing and washing galena varies with the character of the ore shows that no comparison can be instituted between two concentrating plants with regard to their silver-saving capacity, unless they treat the same ore, even if their capacity for saving lead were not thus influenced. This fact is often overlooked in comparing the performances of various plants.

Local Smelting.—The inevitable loss thus experienced even by a complete plant as that at the Western Mine, not to mention the heavy losses of other plants, has raised the question in many minds, whether it would not be preferable to smelt the ore on the spot without previous concentration. Presuming for the moment, what is far from proved, that local smelting could compete with the exportation at present, it could still, in the opinion of the writer, not dispense with concentration altogether. It pays the Western Mine to concentrate ore containing only 10 per cent. lead with (say) 20 ounces silver, and whether it would pay a smelter to smelt this ore without previous concentration, considering the high charges and heavy freight on coke and flux, and pay the mine what it now gets for its concentrates, is exceedingly doubtful.

Beyond this, other conditions militate against the successful initiation of local smelting, chiefly heavy railway freights, high cost of coke, and expensive labour. Moreover, the whole output of the field at present, amounting to about 1400 tons per month, is insufficient to keep a smelter going with other competition to be accounted for.

In 1892 local smelting was attempted by two works—the Zeehan and Dundas Smelting Company and a small smelter at Argenton. The latter was an abortive attempt with never any prospect of success. The former had one water jacket blast furnace erected, smelting in two months an average of 60 tons in 24 hours; the ore, that of the Maestri Mine, at Dundas, already referred to, containing S.O_2 7 to 8, FeO 21 to 24, MnO 4 to 6, Pb 38 to 41, S 2.6, silver 25 to 32 ounces per ton.

After smelting something over 3000 tons of this ore, the supply was exhausted, and as they only smelted for the mine and did not buy the ore straight out, they had no chance in competing with local cash buyers, even supposing the supply of ore to have been sufficient to have kept them going, and had to shut down.

Labour.—This is now about 8s. a day of eight hours for surface work, and 9s. a day for underground mining. Originally, the inaccessibility of the place making living expensive and ordinary home comforts impossible, the price of labour was necessarily high. These conditions are, however, now greatly improved, and, although the price of labour has already been reduced, there appears, under the circumstances, to be no reason why it should not be on the same footing here as in other mining camps of the island, where underground mining costs 7s. 6d. a day in dry ground, and 8s. 4d. per day in wet.

Owing to the high cost of labour, contract work is often employed, and many of the mines, hampered with want of capital as most of them are, sublet their properties to parties of tributors, who pay a royalty on all the ore they produce, varying from 10 per cent. to 30 per cent., and are allowed to work under certain conditions, which vary greatly according to circumstances. In some cases they are left practically free to work as they like; in others, especially if the mine has already been developed to some extent, their operations are restricted to a certain portion of the lode or a limited block of ground for a definite period. If judiciously applied, this system works well, but much depends on the mine manager.

Fuel.—All fuel used on the field is wood, of which there is an abundant supply, and which is cut by contract at very cheap rates, Tasmanian axemen being noted for their prowess with the axe. The price varies according to local conditions from 3s. to 6s. per ton of 80 cubic feet stacked at the mine.

Stores.—Heavy import duties and freights on almost all mining necessities make them rather expensive. Thus, bar iron costs 18s. per cwt., drill steel £2 16s. per cwt., dynamite £4 15s. per case, 34 lb. picks £3 12s. per dozen, &c., delivered at the mines. (R-tail prices.)

Cost of Mining.—For the total cost of mining under the most favourable conditions the Western Mine, being the largest in the district, will afford a good example. In six months' work at this mine, producing 1855 tons of first-class ore and 11,572 tons of second class (which, on concentrating, gave 1885 tons of marketable ore), with 39 tons of kaolin ore—that is, a total quantity of 13,466 tons mined, the total cost, including timbering, securing mine, stores, &c., was £1 2s. 10½d. per ton, made up as follows:—

Stoping, raising, pumping, &c.	£ 11 9
Exploration and development	0 3 6
Concentrating second-class ore, bags, bagging, and delivery at station	0 7 7
Total cost per ton of ore mined.	1 2 10½

For the previous six months it had been 1 4 4½

Climate.—The climate of the west coast is exceedingly healthy and moderate in its temperatures, though the rainfall is very heavy. In 1891 it amounted to 75.6 inches, in 1892 to 87.9, in 1893 to 82.5, and in 1894 to 97.5 inches.

* Paper by G. F. Beardsley, Trans. Am. Inst. M.E., vol. 21, p. 582.

So far it has been attempted to summarise, as concisely as possible, the characteristics of ore occurrences of silver-lead at Zeehan, and the conditions of their development. In connection with the latter it may be stated that if most of the mines had been financially able and willing to develop their lodes systematically with due regard to the future, instead of being content with a hand-to-mouth existence, the ore production of the district would now be far greater than it is.

In conclusion, it remains to refer briefly to the occurrences of other minerals, a detailed account of which would be beyond the scope of this paper.

To the west, in the granite of Mount Heemskirk, alluvial and lode tin are worked to some extent, a peculiarity of a tin lode, worked by the New Cumberland Tin Company, being the occurrence in it of a shoot of rich bismuth ore.

At North Dundas, tin is also worked and being developed. On the Pieman river and its tributaries to the north alluvial gold affords employment to many miners. With it is found the rare mineral irodoamine.

Some distance to the south-east is the wonderful copper and silver deposit of Mount Lyell, the development of which is now actively progressing.

Right in the centre of the silver field, 4 miles due north from the Zeehan station, and close to the serpentine, a deposit of nickeliferous pyrrhotite has lately been discovered, from which about 200 tons have already been exported, averaging about 4 per cent. copper and 10 to 12 per cent. nickel. If development proves this to be of any extent, its superior richness to the Sudbury deposits of Canada, which are of the same class, should make it a valuable property.

THE INSTITUTION OF CIVIL ENGINEERS.

At the last meeting of the above Institution, a paper on "The Dilation, Annealing, and Welding of Iron and Steel"

was contributed by Mr. THOMAS WRIGHTSON, M.Inst.C.E., in which the author dealt with investigations of some of the physical changes which occurred in iron during its passage from the homogeneous molten state to the solid and more permanent condition.

With regard to the alleged floating of solid iron upon molten iron of the same kind, the author had found that if the piece of solid iron was lowered into the liquid metal by means of an iron fork, it always descended with the fork, but in a few seconds the sphere continued to rise above the surface until, at such a temperature that it melted, it quickly joined the molten metal. On first sinking the ball proved itself to be denser than the liquid iron. It then expanded and became considerably less dense than the liquid; and lastly, a reversal took place and the ball in melting became of the same density as the liquid. The assumption that dilatation was continuous and uniform during the passage from the liquid to the solid state was, therefore, erroneous. In order to eliminate the errors due to the emergence of the floating body above the surface of the molten metal, the author used for subsequent experiments an instrument by which the specific gravity of a 4-inch cast-iron ball, completely submerged in the metal, could be observed and continuously recorded. A specimen of the record obtained from the apparatus was given. Experiments upon grey Cleveland iron showed that the specific gravities of the cold solid iron, molten iron, and of plastic iron, were 6.95, 6.88, and 6.50 respectively; and that in passing from the solid to the plastic condition, the iron underwent an increase of volume of 6.92 per cent., followed by a quick contraction as it became liquid.

The order of experiment was afterwards reversed, and the change of volume was measured as the molten iron solidified. Into two spherical moulds of dried loam, 15 inches in diameter, was poured in one case Cleveland white-iron, and in the other Cleveland grey-iron. A few minutes later, the top half of the mould was raised, and the diameter of the congealed surface was measured with callipers. This was repeated at intervals. The results afforded qualitative confirmation of the other experiments. The early consolidation of the outer layers, however, by impeding the free expansion of the interior, prevented quantitative agreement.

The fluid metal first entirely filled the mould. An expansion of the outer layers then took place as the metal became plastic, the diameter of the ball, therefore, increasing. The liquid interior, not having commenced to expand, sank in the hollow shell formed by the cooling and expanding layers of the outside, and thus formed a cavity at the top, which was shown in a photograph of the cross section of the ball. The metal round the inner surface of the top cavity then hardened, and the interior liquid metal expanded gradually towards the centre; and, by its pressure on the soft outer envelope, also tended to increase the diameter of the ball. This action continued until the outer layers arrived at such a temperature that they should contract; when a contest arose between the contracting force of the fast-thickening outer layers and the expanding force of the interior as it in turn became plastic. When these forces balanced each other, further expansion was arrested. After this point in the cooling had been reached, the outer layers contracted as far as their condition would allow, but not to the full natural extent, as, while the outside was in a state of tension owing to the swelling of the interior, fresh layers of plastic and solidifying metal had been built up in the interior. By the time contraction had commenced, these had formed an arch of many courses under different degrees of tension; and such a structure tended to prevent the free contraction of the whole mass. The interior of this enlarged vessel then contracted and drew away principally from the upper part, owing to the mass of plastic iron tending to gravitate to the bottom of the ball.

The specific gravity of the material was found to be, at the surface of the top cavity, 5½ inches above the centre of the sphere, 6.95, at the centre of the sphere, 7.13, and at points, 2½ inches, 4½ inches, and 7½ inches below the centre, 6.87, 7.08, and 7.15 respectively. The results of further experiments on the buoyancy of solid rolled low-carbon steel showed that it followed the same law as cast-iron. It appeared, therefore, that the physical changes from liquid to solid, as from solid to liquid, were similar in grey iron, white iron, and low-carbon steel.

These changes in volume during solidification seemed to account in a measure for the treacheries which so frequently appeared in structures of cast-iron and steel. The same operations, as described for the cooling of a 15-inch ball, were at work in the cooling of all castings. In their design, therefore, forms in which extreme initial strains were likely to be generated should be avoided. The method of cooling should also be favourable to the avoidance of such strains being set up, as cast-iron plates of good material, after being cooled, sometimes suddenly and spontaneously broke into pieces, on account of improper cooling.

The process of slow cooling or annealing anticipated this action by causing the fall of temperature, and consequent change of volume, to be so slow that the groups of particles in the testing had time to accommodate themselves to their changing condition of volume, and thus to minimise the internal strains. In every cooling body the radiation of heat from the exterior was more rapid than from the interior. The most important condition in slow cooling appeared to be that the difference of temperature at any time during cooling, between the hottest and coldest particles, was reduced to a minimum.

In view of the apparent analogy between the expansion of cast-iron in cooling from the liquid to the plastic condition, and the expansion of water in cooling from 4° C. to 0° C., the author had undertaken experiments to ascertain whether the welding of iron could be attributed to similar action to that producing regelation in ice. To identify the two phenomena, it must be proved that the surfaces of the iron at the moment of welding contracted with increase and expanded with decrease of temperature. But as, according to the reasoning of the late Dr. James Thomson, matter possessing this property must also be cooled by impact or pressure, the identification would be complete, if this collateral property of the cooling of welding iron under pressure could be demonstrated.

In the author's experiments, which were carried out at the Mint, with the aid of Professor Roberts-Austen, the temperature at the welding surface of iron heated in an electric welding machine was taken by a Roberts-Austen recording pyrometer. The results were given of a series of five experiments, in three of which a fall of temperature, ranging between 19° C and 57° C, had resulted from the application of pressure, at temperatures of between 1300° C and 1420° C. The thermal expansion of iron was, therefore, negative between 1300° C and 1420° C.

The theory of regelation in ice was founded on the fact that the melting-point was lowered by pressure. This held good also for iron, in which case, however, there were increasing degrees of mobility between the temperature of 1400° C, and that of melting wrought-iron 1600° C. When pressure was applied to a bar, e.g., at 1400° C, not only was the melting-point lowered, but the mobility of all lower temperature within the critical condition was increased.

SOUTH AUSTRALIAN LETTER.

(FROM OUR OWN CORRESPONDENT).

ADELAIDE, NOVEMBER 5.

MINING affairs are looking generally so much more healthy, especially in this colony, that it is worth while to write more frequently now than it was some time ago. I think my last letter mentioned a visit, made about six weeks since, to a remarkable discovery of bismuth in connection with copper and two or three other metals. The locality is about five miles from the old Yudanamutana Copper Mine, 80 miles to the east of the Leigh's Creek Coal Mine and railway station. It is in a very mountainous district, probably about 2000 feet above sea level. The hills are very steep and rugged, rising from base to summit 600 to 800 feet. The surrounding country abounds in minerals, copper predominating, with here and there bismuth, galena, silver, and gold in payable quantities, with traces of cobalt and nickel. A sample of the lode in question was forwarded to the Ballarat School of Mines for analysis, but the result has not yet been received. The bismuth in the lode seems to be in large percentage, and so much in the form of native metal that it should not be difficult to separate it from the copper, &c., by a vanishing process, which would be preferable to smelting the ores together. Very little mining has been done in this district for several years, except by individual prospectors like Mr. Alfred Frost, the discoverer of the bismuth mine, and a veteran prospector of the north country. The Wheel Turner, which was worked up to about three years ago, was then stopped for want of sufficient capital. I have seen payable gold reefs in this district—one reef 60 feet wide showed an average of over 10 dwts. of gold to the ton from several assays. This was at the top of a steep hill 600 feet in height, with good water obtainable at the bottom. Another reef gave returns of from 1 to 2 ounces of gold to the ton, the lode being 3 to 4 feet wide. Gold has been found in so many spots among these mountains that it is evident a properly organized system of mining for it, of course, with sufficient capital, would be certain to pay. Returning to the railway we crossed the Boolyeran Diggings, about 10 miles to the east of the Leigh's Creek Coal Mine. The lode here is of a loose "mullocky" formation, large, but not rich; still carrying gold in sufficient quantity to be payable on account of the ease with which it can be worked, and the large size of the auriferous formation. Water here is plentiful.

I am engaged to go near Wadnaming this week, to inspect a new gold discovery about 250 miles from Adelaide, and which is highly spoken of. The district is certainly a very favourable one for gold, for many miles in extent, comprising the country to the west, and surrounding the Wadnaming gold field, and extending easterly for 10 or 12 miles, including the fine auriferous reefs of Taltabooka.

Meantime, work is progressing very satisfactorily in Donkey Gully, in the old Echunga gold district, and that part of the country promises to revive some of the old time memories of the rich returns it gave to the diggers in the early "fifties."

The Blumberg district also, including the Mount Torrens and Black Snake Mines, is looking up, and good work will be done there during the ensuing summer.

Nor is Barossa idle; recent discoveries there—14 miles from Gawler—present so encouraging an appearance that work is being pushed on with energy.

To the south again, 12 miles or so from Echunga, at Blackwood Gully, a lucky digger turned up a nugget of a pound weight, and worth about £45.

EXPORT AND IMPORT TRADE.

THE BOARD OF TRADE RETURNS—NOVEMBER TABULAR STATEMENT.

Specially compiled for "The Mining Journal" from the Board of Trade Returns.

THE Board of Trade Returns for November show the Imports to have amounted to £23,971,181, against £25,234,149 for November, 1894; an increase of £1,262,968. For the 11 months ended November 30 the imports were £23,720,125, against £23,399,574 for the corresponding period in 1894; an increase of £320,551. The Exports for November totalled £9,540,335, against £9,033,087 for the same month 1894; an increase of £507,248. For the past 11 months the Exports show an increase of £2,295,982, being £95,536, against £9,293,554 for the same period 1894. The Exports of Foreign and Colonial Merchandise were £4,361,070, against £4,455,328; a decrease of £94,258, and for the 11 months ended November 30, £44,943,317, against £43,138,623; an increase of £1,804,694.

EXPORTS—SUMMARY OF INCREASES AND DECREASES.

PRINCIPAL AND OTHER ARTICLES	QUANTITIES.		VALUES.	
	INCREASE.	DECREASE.	INCREASE.	DECREASE.
Raw Materials:				
Coal and Fuel ... Tons	40,522	—	—	110,753
Coal, &c., shipped for steamers' use ... Tons	—	21,165	—	—
Metals:				
Brass, and manufactures of	756	—	6,942	—
Copper, unwrought and wrought ... Cwts.	28,104	—	81,824	—
Hardware and cutlery & implements and tools, and parts thereof	—	—	2,073	—
Iron, unwrought and wrought	—	—	17,048	—
Lead, pig, rolled, &c.	18,192	—	102,181	—
Plate, and plated gilt wares & telegraph wires, &c.	—	328	20	1,320
Tin, unwrought ... Cwts.	—	645	21,021	—
Zinc or Spelter ... Tons	2,828	—	2,536	—
Other Articles ...	—	—	1,522	—
Total ...	—	—	255,157	5,139

Machinery:				
Steam engines ...	—	—	217	—
Other descriptions ...	—	—	—	24,570
Total ...	—	—	—	24,787

Alkali ... Cwts.	—	76,830	—	16,321
Cement ... Tons	5,186	—	8,759	—
Products of Coal ...	—	—	25,746	—

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BRITISH AND IRISH PRODUCE—Continued.

PRINCIPAL AND OTHER ARTICLES	QUANTITIES.		VALUES.	
	Month ended Nov. 30.	Month ended Nov. 30.	Month ended Nov. 30.	Month ended Nov. 30.
Plate and Plated & Gilt Wares	—	—	44,673	44,673
Telegraphic Wires, & apparatus connected therewith	—	—	49,438	49,438
Tin, Unwrought:				
To Russia ... Cwts.	1,620	2,865	5,817	8,722
Sweden and Norway ...	582	1,024	2,086	3,562
Germany ...	588	687	2,078	2,393
France ...	1,930	889	6,856	2,046
Turkey ...	1,603	443	2,671	1,519
United States ...	627	331	2,106	1,149
British North America ...	965	982	3,383	3,228
Other countries ...	4,124	5,573	14,817	12,518
Total ...	11,419	10,774	40,859	37,061

Zinc or Spelter: Unwrought and Wrought	18,763	21,071	11,887	14,423
Total of Principal Articles	—	—	2,385,240	2,593,748
Other Articles	—	—	63,110	64,710
Total of Metals and Articles Manufactured therefrom (except Machinery)	—	—	2,448,350	2,658,458
Alkali ... Tons	721,046	644,138	171,928	125,807
Cement ... Tons	26,223	31,469	42,803	51,562
Products of coal (including paraffin, petroleum, &c.)	—	—	117,310	141,650

PRINCIPAL ARTICLES.	QUANTITIES.		VALUES.	
	Month ended Nov. 30.	Month ended Nov. 30.	Month ended Nov. 30.	Month ended Nov. 30.
Mining (Not Steam Engines):				
To Countries in Europe ...	—	—	2,014	2,388
United States ...	—	—	52	—
Countries in South America ...	—	—	2,640	—
British Possessions in S. Africa ...	—	—	20,543	4,411
East Indies ...	—	—	3,977	—
Australasia ...	—	—	3,120	—
Other Countries ...	—	—	2,256	1,208
Total ...	—	—	34,002	66,416

Total of Machinery other than Steam Engines	—	—	1,067,724	1,041,004
Total of Steam Engines	—	—	282,563	284,700
Total of Machinery and Mill Work	—	—	1,350,287	1,325,704

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CORRESPONDENCE.

We wish it to be understood that we do not hold ourselves responsible for, and do not necessarily endorse, the opinions of correspondents. All communications must be accompanied by the names and addresses of the senders, though these need not necessarily be published.

SILVER LEAD MINING AT BURKE, IDAHO.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—The rich mines known as the Tiger and Poorman have been worked separately for the last four years, and produced 88,123 tons of ore at a profit of £305,000. They have recently been amalgamated for the purpose of saving the cost of management, operating, and combining the water-power, which, with the electrical plant, will save at least £10,000 per annum.

The workings are well opened out to the 10th level, on a true fissure lode, varying from 10 to 30 feet wide, and in many places the ore is solid for 5 to 10 feet, and the rest good concentrating ore. The ore in reserve above the 10th level is estimated at 173,100 tons, which at present prices will give £346,200 profits. The present machinery and plant, with the electrical power, cost upwards of £104,000, and is capable of returning 35,000 tons of shipping ore per year at a profit of £70,000. In order to sink the shafts, and open out the lodes below the 10th level, some extra machinery will be required, so that by spending £30,000 for this purpose, the reserves will be considerably increased.

The mines are well served by the Northern Pacific Railways running right into the works, so that the ore is sent to the smelting works direct at a cheap rate. Here, then, we must admit there is a splendid opening for investors at bed-rock prices, and to anyone interested I shall be pleased to give any further information required.—Yours faithfully,

JOHN L. M. FRASER,
Consulting Mining Engineer.

163, Ebury-street, London.

NEW CASSEL COLLIERY (TRANSCAAL).

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—I note the meeting of the New Cassel Coal Company and their large coal field. I think there is little hope for the collieries in the Middleburg district doing good at the present time and under the present circumstances. There is abundance of coal in the Transvaal. The difficulty is its disposal. Johannesburg, with the mines in the neighbourhood, are, practically, the only markets for coals in the Transvaal, and will continue to be so for many years. They are supplied from the collieries in the neighbourhood of Brakpan and Springs, at an average delivered price of 20s. a ton. Some of the mines which are nearer the collieries get their coals cheaper, and some, which are farther away, pay more for it. The price at the collieries is about 10s. a ton.

The New Cassel Mines, which are near Middleburg, are 100 miles further from the mines by the Delagoa Railway. Now, as the Netherlands Railway Company have a concession for all the railways in the Transvaal, and charge 3d. per ton per mile, coal from this colliery will cost 25s. per ton for carriage more than the others, and, consequently, though the coals are of better quality, they are out of the market. It has been proposed to continue the Springs line of railway to Ermelo, which would shorten the distance by 30 miles, but at 11s. so long as the rates are so high they cannot be sent to compete with the nearer collieries. Should the Ermelo extension be made it would pass through a coal field all the way, and would thus raise additional competition from collieries nearer the mines than the Middleburg district. No doubt the Middleburg coal is of better quality than some of the coal used at the mines, but the coal they have at present is perfectly suited for steam raising, and the demand for a first-class coal at 20s. a ton higher than the other is a very limited one indeed.

With regard to shipments at Delagoa Bay. The Natal coal, which is very similar to Middleburg coal, is sold at Durban at 20s. a ton. The quantity disposed of is only 50,000 tons a year, and there are more steamers coming to Natal than to Delagoa Bay. Besides, the distance from Middleburg to Delagoa Bay is 250 miles, and the carriage would render the price prohibitive. The quality of the Natal coal, too, is not first-class, and it clinkers on the bars, and the mail steamers do not use it, but use Welsh coal. Of course, if a very reasonable rate were got (the Natal Government railway charge is only 1d. per ton per mile for shipment at Durban), it would make a difference. But there is an immense field of coal much nearer the market than Middleburg, and I don't think there is much chance for any colliery in the Middleburg district being able to dispose of a large output of coal.

M. E.

THE CLAIMS OF BRITISH COLUMBIA.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—Can you explain the apparent indifference of British mining investors to the enormous mineral wealth and resources of British Columbia? Some of your contemporaries appear to be drawing the attention of capitalists to what I firmly believe to be one of our most naturally wealthy possessions. An inordinate amount of capital appears to drift towards South Africa and West Australia at a time when better internal means of communication, easier and less costly access and, as far as minerals are concerned, a veritable "Land of Promise" exist in regions west of the Canadian "Rockies."

I have just returned from a tour in the Kootenay district of B.C., and have been amazed at the splendid show of ores, and the excellent outputs of even incipient mines. The Americans—notably, those of Butte Mountain—are investing heavily in properties, erecting smelters, and, to use their own expression, "putting them-elves in the good slum," while it would seem British capitalists entirely ignore the country.

The Trail Creek district, of only two years growth, with its new City of Rosebud, its War Eagle Mine (just sold, I hear, for over \$1,000,000), then the Josie, San Elino, and other new ventures—all indicate a tangible source of wealth and safe investment. Ample water power exists for the newer metallurgical treatment of the prevailing ores, wood is abundant, good coal recently found, and, to crown all, an excellent climate.

What is now wanted is the investment of British capital before our American cousins secure the "plums"—Yours obediently,

T. VAUGHAN HUGHES,
Asso. R.E.M. & Co.

Assay Office, Holywell, Flint, December 11.

REPORTS FROM THE MINES.

COLONIAL, INDIAN, AND FOREIGN.

AUSTRALASIAN.—Mine report for fortnight ending October 24: During the past fortnight Bishop and party have sunk the shaft 30 feet, total 531 feet, and timbered 27 feet, total timbered 517 feet. The sinking has been through large boulder conglomerate, with plumbago facings; but at 527 feet there was a seam of plumbago out from 6 to 10 inches thick. Under this there was 3 feet of small boulder conglomerate. At present the sinking is through grey conglomerate. The water keeps about the same.

BETHANGA GOLD FIELDS.—The manager reports for the month ending October 5: 200½ tons of ore treated for 399 ounces 9 dwts. 6 grains of gold. Assay value of tailings 2 dwts. 15 grains. Old tailings treated 167½ tons for 100 ounces 12 dwts. of gold. The cost of treatment of the ore is 31s. 2½d. per ton, and of the tailings 11s. 10½d. There are several thousand tons of old tailings still on the dump, which will yield a good profit.

BAYLEY'S NO. 2 SOUTH.—The following fortnightly report, dated November 5, has been received from the mine manager, Mr. W. M. Vivian:—I beg to report that for the past fortnight at No. 2 shaft the level has been driven a further distance of 10 feet, making a total distance from the crosscut of 86 feet. The width of the reef continues to improve, being now 18 inches, and worth about 2½ ounces of gold per ton. At No. 1 shaft 8 feet has been sunk, making the total depth 53 feet. The average width is 4 feet 6 inches, and worth about 22 dwts. of gold per ton. At No. 5 shaft the fortnight has been occupied in timbering and securing the same. I enclose herewith plan and section of operations brought up to date.

CHITAPAS.—Mine report for fortnight ending October 31: Santa Fe Hill drift No. 3 driven 7 feet, total 157 feet 6 inches. No change. Santa Fe Hill drift No. 3 crosscut west driven 5 feet, total 12 feet. No change. Taylor main extension driven 6 feet, total 678 feet. No change in appearance, but assaying gold 1 dwt. 12 grains; silver 9 dwts. 12 grains, copper 9 per cent. San Juan extension driven 17 feet, total 37 feet. Assays gold 7 dwts. 12 grains, silver 8 ounces 9 dwts. 72 grains, copper 4.08 per cent. We are following the hanging wall of the deposit, which is bearing in a curve to the west. Two-thirds of the drift is in very good ore. San Francisco adit driven 12 feet, total 22 feet. We are gradually getting through the river deposit into firmer rock. Providencia crosscut east driven 4 feet, total 7 feet. No change. Taylor sub crosscut north-east driven 12 feet, total 30 feet. No change.—Extraction. Old Providencia. S. ore 1 650 tons, assaying gold 1 ounce 4 dwts., silver 12 ounces 19 dwts., copper 7.70 per cent. Santa Fe stopes west and east produced 401 tons.—San Juan stopes. Stopped 580 tons, assaying gold 5 dwts., silver 6 ounces 10 dwts., copper 3.24 per cent.—Providencia Auer stopes No. 1. Stopped 16 tons, assaying gold 6 dwts., silver 4 ounces 2 dwts., copper 1.98 per cent. The bridge over Pine Creek connecting the San Francisco adit with the mill side of the river is completed, also the tramway over it.

COROMANDEL.—Superintendent's report for fortnight ending November 16: Prospect shaft 500 feet level south. The crosscut has been driven since last report 16 feet, total 264 feet. The end is letting out a little more water, but otherwise there is no change.—200 feet level north. The winze in bottom of this level has been sunk 8 feet, total 18 feet below level. Lode in bottom 3 feet 6 inches wide, assaying 10 dwts. of gold per ton.—East shaft 500 feet level north. The winze has been sunk 16 feet 6 inches, total 26 feet 6 inches. Lode is 2½ to 3 feet wide, assaying 8 dwts. of gold per ton.—440 feet level south. The rise near south end of this level has been risen 20 feet, which is its present height. Lode 1 foot 6 inches wide, worth 15 dwts. of gold per ton.—320 feet level north. The crosscut east has been extended a further 22 feet, total 43 feet. The branch last reported proved to be 1 foot wide, and a second branch has since been raised through parallel to the former and of about the same thickness. The assay value of these is low and the crosscut is being continued.—200 feet level north.—A crosscut east from this end has been driven 28 feet, but has not yet discovered anything of value. Two days ago we cut water and this is steadily increasing.

CRAVEN'S CALIFORNIA.—The following fortnightly report has been received from the mine, dated Charters Towers, October 24: In the underhand stopes from No. 8 level the reef averages about 6 inches. The reef in the crosscut at the end of the old No. 8 level averages about 10 inches thick of good quality. In the three stopes over this level the reef averages about 8 inches. In the stopes over the hanging wall reef the stone averages about the same as last reported. No. 7 crosscut has been extended a further 20 feet, making a total of 110 feet from the starting point. Bounce and party have got about 2 tons of stone from the stalling in No. 7 level. Hooper and party in No. 6 level have got about 5 tons of stone broken. Bowater and party in No. 5 level have got about 7 tons of stone broken, also this party have laid the road and repaired the level, and now they are making fair progress. The haulage of quartz for the company during the fortnight is 33 tons, making a total of 48 tons in the paddock.—(Signed) G. Cabassi.

CHAMPION REEF.—Fortnightly report of Captain James Rowe, superintendent, dated November 18: Dalvel's shaft. At this shaft we have been engaged opening out the rise above 840 south of Garland's, which was communicated with the shaft below the 740 level.—Garland's shaft. This has been sunk 5 feet 3 inches, total depth 970 feet 3 inches. Lode 2½ feet wide, assaying 2 ounces 1 dwt. 22 grains of gold per ton. The 940 feet level north of shaft has been driven 37 feet 6 inches, total length 213 feet 6 inches. Lode 3½ feet wide, assaying 1 ounce 18 dwts. of gold per ton. No. 1 rise in back of level risen 27 feet, total height 47 feet 6 inches. Lode 3 feet wide, assaying 1 ounce 12 dwts. 12 grains of gold per ton. No. 1 rise in back of level risen 14 feet 6 inches, total height 16 feet 6 inches. Lode 1 foot 3 inches wide, assaying 16 dwts. 12 grains of gold per ton. The 840 feet level north has been driven 26 feet 3 inches, total length 644 feet 9 inches. The end is in the 41 ordered ground seen in the upper levels. No. 4 rise in back of level risen 15 feet, total height 65 feet 6 inches. Lode 1 foot 6 inches wide, assaying 1 ounce 5 dwts. 6 grains of gold per ton. The 740 feet level north has been driven 27 feet 3 inches, total length 842 feet 6 inches. Lode 5 feet wide, assaying 1 ounce 15 dwts. 6 grains of gold per ton. No. 6 new rise in back of level (120 feet north of No. 5) risen 8 feet 6 inches. Lode 6 feet wide, assaying 1 ounce 3 dwts. 6 grains of gold per ton. The 630 feet level north has been driven 29 feet, total length 992 feet 3 inches. Lode 3½ feet wide, assaying 2 ounces 2 dwts. 6 grains of gold per ton. No. 8 rise in back of level risen 17 feet 6 inches, total height 33 feet 9 inches. Lode 2½ feet wide, assaying 2 ounces 2 dwts. 10 grains of gold per ton. No. 7 rise risen 18 feet, total height 65 feet. Lode 3 feet wide, assaying 1 ounce 14 dwts. 20 grains of gold per ton.—Ribblesdale's shaft. This has been sunk 6 feet, total depth 668 feet 3 inches. Lode 9 inches wide, assaying 1 ounce 7 dwts. of gold per ton. The 640 feet level north has been driven 22 feet, total length 216 feet 6 inches. Lode improving, is now 1 foot 6 inches wide, assaying 1 ounce 18 dwts. 20 grains of gold per ton. The 640 feet level south of shaft, on west part of lode, has been driven 18 feet, total length 180 feet. Lode 9 inches wide, assaying 1 ounce 2 dwts. 12 grains of gold per ton. This end is suspended for a time. The 640 feet level south of crosscut east of this level on east part has been driven 11 feet, total length 26 feet. Lode 2½ feet wide, assaying 1 ounce 10 dwts. 11 grains of gold per ton. The 540 feet level south has been driven 27 feet 8 inches, total length 477 feet 3 inches. Lode 4 feet wide, assaying 1 ounce 2 dwts. 6 grains of gold per ton. No. 2 rise in back of level risen 14 feet 9 inches, total height 47 feet 9 inches. This is communicated with winze sunk below 440 south.—Carmichael's shaft. We have not as yet been able to resume the sinking of this shaft. We are still engaged cutting bottom plat, and fixing the necessary plat timbers. The 540 feet level north of east crosscut, on east part of lode, has been driven 24 feet 6 inches, total length 226 feet. Lode 3 feet wide, assaying 1 ounce 5 dwts. 12 grains of gold per ton. No. 3 new rise above level (120 feet north of No. 2) risen 6 feet 6 inches. Lode 3 feet wide, assaying 1 ounce 5 dwts. 10 grains of gold per ton. No. 3 rise

risen 12 feet, total height 59 feet. Lode 2 feet wide, assaying 1 ounce 3 dwts. 2 grains of gold per ton. The 440 crosscut east has been driven 12 feet 3 inches, total length 81 feet 3 inches. We have now started to drive north on a branch met with in the crosscut.—Rowe's shaft. This has been sunk 7 feet 9 inches, total depth below the 515 feet level 61 feet. Lode 2 feet wide, assaying 1 ounce 18 dwts. 22 grains of gold per ton. Winze below 515 north of shaft sunk 10 feet, total depth 31 feet. Lode 1½ foot wide, assaying 1 ounce 16 dwts. 20 grains of gold per ton. The 515 feet level south of shaft has been driven 11 feet 9 inches, total length 26 feet. This end is in the east and west dyke.—New mill. We are hastening on with the excavations for foundations of this, and shall soon start the masonry work.

GEM OF CUE.—Manager's report for October: During the month of October I have continued work in two shafts A (water shaft) and B north lode. Water shaft is now down 80 feet. I have been compelled to again discontinue sinking operations in this shaft, finding the ground was getting unsecure. The work of securing the shaft by timber is now complete. On Monday next, the 4th inst., I intend to put on a double shift in this shaft. As the ground is sound at present depth, I do not anticipate any further delay, and the work of sinking will be rapidly proceeded with. E shaft (north lode) has been sunk to a depth of 40 feet. I have discontinued sinking, and am now getting out stone from open cut on same lode, with a view of crushing. Another week sinking and breaking down stone will give me a more definite insight as to the value and permanency of this yet undeveloped lode. I am putting on four additional miners on the 4th inst., and will, as instructed, obtain a crushing of from 50 to 60 tons. I purpose delaying starting the main vertical shaft and concentrating the labour at shaft C. This underlay shaft can be continued, and ore raised in process of sinking. It is very necessary work for the development of the mine, as it can be connected at a depth with water shaft A and open up for stopping operations about 170 feet of back, from which crushings could be economically and expeditiously obtained. With increasing number of miners now engaged, the developments of the mine will be more rapid, and the progress report for coming month I have every reason to believe will be highly satisfactory.

GOLD FIELDS OF MYSORE.—Mine report for fortnight ending November 19: South shaft. The 280 feet level north of crosscut on West Balaghat lode has been extended a further distance of 13 feet 3 inches, total 125 feet 3 inches. The lode maintains its size and character, assaying 2 dwts. 8 grains of gold per ton. The south end has been driven 17 feet 3 inches, total 142 feet. The lode formation is 4 feet wide, which is of stratified schistose rock, interbedded with stringers of quartz, and assays 2 dwts. of gold per ton.—Oriental lode 280 feet level north. Driving of this level has been resumed to facilitate the rising against the middle shaft. It has been driven 10 feet 8 inches, making its total length 197 feet 2 inches from shaft. The lode, although 3 feet wide, is not of much value, assaying 2 dwts. 7 grains of gold per ton. Winze in bottom of level 130 feet from shaft sunk 4 feet 6 inches. Lode 3 feet 6 inches wide, quartz, assaying 6 dwts. 7 grains of gold per ton. Winze in bottom of the south level 130 feet from the shaft sunk 3 feet. The lode is 1 foot 6 inches wide, assaying 10 dwts. 4 grains of gold per ton. The object of these winzes is to communicate with the rises going up from the 380 feet level so as to expedite the opening up of ground for stopping. Stope over the 280 feet level north the lode is 10 feet wide, assaying 4 dwts. of gold per ton. Intermediate drive over the 280 north driven 12 feet, total 23 feet. The lode is all the width of the drive (5 feet), assaying 4 dwts. of gold per ton. The 380 feet level north, No. 1 rise, risen 13 feet 6 inches, total 49 feet 6 inches. The lode is 4 feet wide, of a mixed nature, assaying 4 dwts. of gold per ton. No. 2 rise going up against the middle shaft risen 10 feet 6 inches, total 60 feet 6 inches. I am following up a division, but it does not give any quartz of value.—Crosscut west 330 feet north of shaft. Driving of this crosscut has been resumed, and it has been lengthened a further distance of 9 feet 6 inches, making its total length 59 feet 6 inches. The object of this crosscut is to explore the ground to the west of the Oriental lode. The 380 south of No. 1 rise risen 8 feet, total 32 feet. The lode is 4 feet 6 inches wide, quartz assaying 3 dwts. 4 grains of gold per ton. The 470 feet level stopping roof of the south level. Lode 1 foot 6 inches wide, quartz assaying 5 dwts. 16 grains of gold per ton. We have commenced to cut down the roof of the shaft below the 470 feet level to make room for a tip-plate below the level, and in doing so we found some quartz showing visible gold. This we think encouraging for deeper sinking, and no time will be lost in pushing on this work, and sinking the shaft.—Middle shaft. We have commenced to cut into the footwall side of the shaft at the 235 feet level to make a depositary for water previous to firing the plunger lift at that level; it is necessary that this should be done before we commence sinking the shaft.—Prospecting shaft, Glendon block. This shaft has got through the ferriferous matter spoken of in my last report, and is now going down in a mass of porphyritic rock which is charged throughout with pyrites, two samples from which gave respectively 12 grains and 1 dwt. 11 grains per ton, thus showing it to be gold bearing.

HARMONY.—Extract from sub-manager's letter, November 14: From Sedan. Since last I wrote you I have had a very taken of the Maiden reef and casings. The reef matter, 4 feet wide, yields 14 dwts. 6 grains. In reference to the float stone to the east on the same strike, which I mentioned last week, no permanent reef has been found up to the present.

KEMPINKOTE.—Superintendent's report for the fortnight ending November 13: Garland's shaft has been sunk 13 feet 6 inches total depth from surface 473 feet 6 inches. The lode has passed out to the north-west of shaft. The bottom of shaft is in schist. 345 north drive has been driven 25 feet, total distance from main crosscut 164 feet. About 150 feet north of main crosscut we met with the footwall. We are carrying this with about 5 feet of the lode, assaying 1 dwt. of gold per ton. 345 north drive No. 1 crosscut east has been driven 8 feet 6 inches, total distance 51 feet. Lode in the end full size of the drive, assaying 12 grains of gold per ton. 345 south drive has been driven 31 feet, total distance from main crosscut 237 feet. Lode in the end 3 feet wide, assaying 1 dwt. of gold per ton.—245 north drive No. 2 winze, 50 west of footwall No. 1 crosscut has been sunk 5 feet 6 inches, total depth 37 feet 6 inches. Lode in the bottom full size of the winze giving an average assay of 8 dwts. 3 grains of gold per ton. 245 south drive has been driven 17 feet 6 inches, total distance from main crosscut 480 feet. Lode in the end 3 feet wide, assaying 1 dwt. of gold per ton. Henty's shaft has been sunk 2 feet 6 inches, total depth from surface 368 feet 6 inches. There is no change in the ground in the bottom of shaft. Through a breakage in our pumping engine the work was hindered here, and in the 341 south drive for about a week. 341 north drive has been driven 18 feet 6 inches, total distance from main crosscut 60 feet 3 inches. The end is still in schist. 258 south drive No. 1 crosscut west has been driven 8 feet, total distance from main level 33 feet 6 inches. This 8 feet has been driven through schist, which has proved to be the hanging wall of the lode. The schist has been suspended.—173 No. 1 crosscut west, 100 feet north of shaft has been driven 8 feet 6 inches, total distance from main level 62 feet. The ground in the end is hard black schist.

KINSELLA.—Mining report for fortnight ending October 31: Buttery commenced work this morning at 8 o'clock. We hope to run continuously; we may expect some little stoppages until working parts adjust themselves. The hanging is not yet complete; this will not, however, interfere with working machinery. At the trial on Saturday last everything worked smoothly.—Foreman's report. I have the honour to report that during the past fortnight the following work has been carried out at the main shaft 100 feet level. A drive has been started north of the lode from the north crosscut, and driven a distance of 33 feet in this drive. We have had a strong body of quartz from 4 to 5 feet wide, but according to samples tested, is not of very rich quality, the samples showing a return of about 5 dwts. per ton, but as we have a fairly good shoot of gold at the 43 feet level, about 100 feet further north, I hope to see better results from this drive every day. In the south drive very good progress has been made, and a distance of 42 feet has been driven, making total distance driven 65 feet. For the most

of the fortnight the lode was very small, and finally cut out; fair gold was seen for a few feet before the lode pinched out. A new slab of stone made, and has increased to 3 feet in width during the last few days, but so far the samples tested are very poor. The stone has improved in appearance since yesterday, and to-morrow will again test the stone, as all the shoots of stone dip to the south. I think we are just coming on to the block of stone driven through south of the shaft at the 43 feet level. At No. 1 north shaft the winze plat has been cut on the east side of lode, and the winze sunk 7 feet. The stone is of fair quality according to sample, worth 15 dwts. to 1 ounce per ton; as the west side of the lode is generally the best, we may expect even better stone when we get through the lode, which will be in a few days. South of main shaft 43 feet level or winze plat has been cut, and the winze sunk 5 feet at No. 1 south shaft. I do not expect much stone from this winze, as I am of opinion that this winze will go through the break in the lode between it and the main shaft. Still, it is necessary to sink it for ventilation purposes. Another winze has been started at No. 2 south shaft, a plat has been cut, and the winze sunk 5 feet. At this winze the lode is 6 feet wide, of fair quality, and I expect good results from the stone raised from it. I have had to put on a few more men to carry out this work, and later on may require a few more; but as few men as possible are employed, and every care is being taken to keep down expense. Battery is about ready for work, and is without doubt the best plant on the field. A few little alterations may be necessary to suit local requirements, when I hope to see it pounding out satisfactory results. We have hauled 5277 tanks of water, 301 trucks of quartz, and 224 trucks of mullock. We have put into battery hopper 83 trucks of stone. The water has decreased a little in main shaft; for the first three shifts of this fortnight 406 tanks were baled, for the last three shifts 366 tanks, showing a decrease of 40 tanks for 24 hours.

HEIDELBERG GOLD.—Reporting under date of November 9th, the manager of the mines, speaking of No. 4 shaft, writes as follows: This shaft is sunk about 55 feet from the surface, and I am pleased to say the reef measures 3 feet wide between walls at this depth. I have made several pannings of the ore within the last few days, and have had very satisfactory results. I should judge the average value to be at least $\frac{1}{2}$ ounce of gold to the ton of ore. The characteristics of this reef are such that I feel confident in stating that there is every probability of an improvement with depth, and I believe we shall be able in the course of a few months to open out on this part of the property one of the best mines in this district. You will understand that every farhom sunk through this large reef represents a very considerable quantity of ore. Under date of November 16th, Captain Pascoe further reports:—I am for the time being pushing on all my work at No. 4 shaft with vigour, and hope to complete all necessary preliminary work (cutting down collar of shaft, putting in tram road, &c., to the 100 feet level), and in about a week or 10 days I shall be in a position to set contracts to drive the 100 feet level east, and also the 100 feet level west of shaft, where we have a large reef fully 24 feet wide at each end of the shaft. I took a fair sample of the reef yesterday, and, judging from the result of my panning, I should say it is worth 1 ounce of gold to the ton of ore. There is every indication that as we extend our levels from the shaft, good auriferous ground will be opened out.—Discovery shaft. The men are making good progress in driving the crosscuts north and south of this shaft, the formation being decomposed sandstone.

LONDONDERRY.—The following are extracts from letters from Mr. R. S. Black, dated November 4 to 5, to read in conjunction with his letter of October 21, in which he states: "We are crushing the average stone, and will in future clean up once a fortnight."—Letter dated November 4: "The main shaft is down 210 feet, and we are now opening up at the 200 feet level. As the lode cannot be far off, I expect to cut it very shortly; I will then drive south and north on it with all possible speed. The battery has been running two shifts during the week, but with several stoppages on account of the boilers fouling. We have just cleaned up for the fortnight's run, and are retorting to-day; the result of which I will advise you in due course."—Letter dated November 5: "Referring to my letter of the 4th inst., I beg to advise you that during the fortnight ended the 1st inst., we crushed 82 tons of stone for a yield of 157 ounces retorted gold, which on smelting gave 155 ounces 12 dwts. This has been lodged with the Bank of Australasia, who have advanced £500 against it, pending the receipt of the Mint returns."

MYSOKE WEST AND MYSOKE WYNAD.—Half-monthly report to November 15: Tank mine, South shaft. With the end of last month sinking was stopped here, and a drive north at 507 was started to explore the new discovery of quartz at that depth. This was driven north on the lode 28 feet. The quartz was carried all the way, and averaged quite 7 feet wide. The quartz along the drift was not so rich as when first cut in the shaft, but averaged 2 ounces for the 28 feet driven. It is peculiar that in this drive the quartz and country has turned over, and is dipping towards the east. Sinking was recommenced on the 14th inst., and a progress of 1 foot 6 inches reported next day, the total depth of shaft now being 510 feet 6 inches. The shaft will be carried down another 25 feet, after which a plat will be cut at the 507, a crosscut driven west to the old lode, and the new lode explored both to the north and south.—450 level north. There has been no progress here, the level having been allowed to rise too much, necessitating stopping down. In the bottom of level the quartz proves to be somewhat larger than it was above in level. 800 ft north of No. 2 rise, lode 3 feet wide, worth 6 dwts. per ton. Slope south of same lode 4 feet 6 inches wide, worth 10 dwts. per ton. Intermediate level north has been driven to 200 feet, making a progress of 20 feet 3 inches. The end is much the same as last reported. North intermediate slope, the lode is 3 feet wide, and is worth 14 dwts. per ton. South intermediate slope the quartz is 12 feet wide, and is worth $\frac{1}{2}$ ounce per ton. The mill is running well. The extra 10 heads are in course of erection.

NO. 7 NORTH-EAST QUEEN.—The following fortnightly report has been received from the mine, dated Charters Towers, Oct. 25: Hamilton and party. The drive in this block is showing no stone at present, and in the slope the reef is small—from 4 to 6 inches. They will start crushing to-morrow a parcel of about 24 tons. Wilkinson below No. 2 level west has a nice reef about 12 inches thick.—Balch and party. There is 2 feet of very heavy mineral stone in the face of this drive at present, but of poor quality, with a small leader, carrying gold above the other. The slope shows 10 to 12 inches of good stone. I have let two blocks at the back of No. 3 level, one on each side of the shaft. Davies and party on the western side, and Ferguson and party on the eastern side. Wherry and party are still working on from 6 inches to a foot of stone. Jordan and party are at present crushing. They will have about 45 tons to go through. Quartz hauled for the fortnight about 39 tons.—(Signed) John T. L. Williams.

MOUNT ZEEHAN (Tasmania).—Manager writes for week ended October 25: Silver Queen section No. 8 lode. No. 2 level north extended 20 feet. In the face there are 2 feet of good seconds made up of small stringers of galena. East crosscut extended 12 feet, total from shaft 60 feet. We now feel sure of having passed through whole of No. 8 lode, and will resume driving south on main hanging-wall. Concentrator has been running chiefly on Zeehan-Montana and Censah ore. We crushed for ourselves 19 tons seconds, which produced 7 tons 16 dwts. concentrates containing about 5 tons of lead and 707 ounces of silver. Our returns from tributors for the month amounted to £307.

ZEEHAN-MONTANA.—Manager reports for the month ended October 25, that he has shipped 161 tons of pills and concentrates, containing about 109 tons of lead, and 16,000 ounces of silver of an estimated net value of £2103. The expenditure at the mine for same period amounted to £1981, leaving an estimated profit of £822.

FORTUNA.—Mine report dated December 4: Canada Incom Mine. In the 110 fathoms level driving west of No. 2 drive shaft the lode continues regular, and has a most promising appearance, and is valued at $\frac{1}{2}$ ton per fathom.—East Main Mine. The lode in the 212 east of Taylor's engine shaft yields good stone of ore occasionally. In the 200 east of the same shaft the lode continues poor. The lode in the 92 west of Fulgrava's shaft is small and the ground is hard.—Julian's winze sinking below the 200 east off San Miguel. This has reached the required depth, and the lode is poor.

SPITZKOPF FARM.—Progress report for the month of October:—Stripping. Stripped overburden off the reef between Nos. 1 and 2 drives on Spring Hill by hand 190 feet long by 14 feet wide; broke out ore and forwarded to mill. Stripped by water power on Leader Hill 200 feet in length, depth of overburden 12 feet, by an average of 28 feet in breadth; ore broken out and forwarded to the mill; average thickness of reef 7 inches.—Driving and development on dolomite reef. No. 1 drive Leader Hill extended 34 feet; total length 224; average thickness of reef 10 inches. The ore is broken out to the face, and for the last 20 feet proved of very high grade. This feature is of great importance, as it is the longest drive projected into Leader Hill. Two sets of timber at entrance. Crosscut north-east extended 30 feet; total length 41 feet; average thickness of reef 10 inches. The ore has been broken down into the end, and is of fair quality. Crosscut south-west extended 27 feet; total the same; thickness of reef 15 inches; ore of excellent grade. No. 2 drive extended 31 feet; total length, 178 feet. The thickness of ore varies from 6 inches to 18 inches, and has been broken out to the face; quality very fair. Crosscut west commenced, 126 feet from the entrance of No. 2 drive, has been extended 51; total length 79 feet; average thickness of reef 12 inches, of fair quality. Crosscut east was commenced towards the end of the month, distance driven 17 feet, and no ore broken out. No. 3 drive 120 feet, west of No. 2, extended 61 feet; total length 91 feet. Average thickness of reef 14 inches, ore broken down for 84 feet, grade very good. Twenty sets of timber have been put in. No. 4 drive, 110 feet west of No. 3, extended 72 feet; total length 78 feet; average thickness of seam 12 inches. Ore broken down for 60 feet, good, say dirt. Eleven sets of timber have been set up, and timbering is in progress towards the face.—No. 5 drive, between Nos. 1 and 2. Cutting to entrance 27 feet long by 5 feet deep, drive projected 31 feet. Three sets of timber at entrance; average thickness of reef 17 inches to 18 inches, of very good quality. Throughout the whole of the foregoing, drives look well, and show a regular body of ore greatly superior to that obtained by surface stripping, that fact was easily perceivable by the appearance of the plates when the stuff was being put through the mill, and also by the assay of the tailings. Undoubtedly, a good mine is being opened up by the foregoing workings.—Prospecting. This work is being vigorously carried on. No. 1 drive on dolomite reef about 350 feet south-west of mill has been extended during the past month 71 feet 6 inches, total length 102 feet. The thickness of the seam varies from 12 inches to 2 inches; it is in very shallow ground, the covering at the present end not being more than about 25 feet. At about 35 feet to 40 feet from the entrance visible gold was easily discernible in some of the quartz, and the loose dirt gave in the pan an excellent prospect of coarse gold. For the last 60 feet driven the seam has run small and poor; but a change is discernible in the face for the better, and I think there is every possibility of its coming in strong again.—No. 2 drive from trench at 1200 feet south-west of mill. This drive is entered on the reef (dolomite) from the main tramway level; length of drive 32 feet; on top of the seam, which in itself is fair, and varies from 18 inches to 7 inches in thickness, exists a series of what may be termed vertical leaders mixed with oxide of iron pyrites; both the seam and leaders carry a little fine gold.—No. 3 drive about 250 feet south-west of No. 2. Cutting from tramway level to entrance, 44 feet; length of drive, 41 feet; seam 10 inches to 12 inches thick, well defined, showing a little gold by panning. About 60 feet above the level of this drive another cutting has been made, exposing the formation of another flat vein 6 inches thick, encased in slate. So far, no gold has been found in it. No. 4 drive is entered from a cutting 36 feet long, at a point about 600 feet north-west from the mill. Length of drive 52 feet; seam very pinched, in shallow ground, but gradually deepening as the drive progresses. Nos. 1, 2, and 3 drives, which are heading nearly west, are following the reef on its underlie, which is at a very low angle—say, about 5°. Westward of these drives, varying in distance from 400 feet to 800 feet, is rapidly-rising ground covered with chert boulders, which extend to the western boundary. On the plateau of this ground, at a distance of, roughly, 3000 feet west from the mill, and at an elevation of between 300 feet and 400 feet above it, a shaft is being sunk, with a view, if possible, to strike the upper or Theta reef. So far, the shaft, which is down 50 feet, has passed through only loam and chert boulders, a little pink shale being scattered through it. This shale I consider a favourable indication, as it distinctly in other places overlies the Theta seam. Northward of the above shaft, on the side of a deep donga or ravine, a trench is in progress, the object being to intersect the dolomite and diorite, and ascertain if a contact vein exists between them, as it is between the dolomite limestone below and the decomposed diorite above that the Theta vein should be found. Total driving for the month 551 feet, total sinking 486 feet, total trenching and cutting 245 feet, total stripping of overburden 390 feet by from 36 feet to 14 feet by 10 feet, equal to 3539 cubic yards.

	Oz. dwt. gr.	Value.
Gold shipped to London	510 17 0	£1,680 9 4
Gold sold	32 2 16	128 10 8
	542 19 16	£1,809 0 0

	Oz. dwt. gr.	Value.
Alluvial gold, 1895:—		
March	201 16 0	£ 777 12 11
September	552 10 10 (77s.)	2,127 4 1
October	240 0 16	928 18 11
Estimated value of quartz, concentrates, and blanketing	110 0 0 (77s.)	423 10 0
	1,104 7 2	£4,257 5 11

Number of cubic yards washed, 80,250.
SHEBA.—The following report has been received from the general manager for the month of October: Mine. Above No. 5 level no work has been done in this part of the mine.—No. 5 level. The west drive was continued a further 25 feet. No. 17 winze, west incline shaft, sunk 24 feet. No. 15 winze, east incline shaft, sunk 17 feet.—No. 6 level. No. 1 south crosscut continued 6 inches.—No. 7 level. The east drive advanced 27 feet. No. 6 north crosscut continued 15 feet. No. 7 north crosscut continued 10 feet. Low level tunnel continued on hanging 47 feet. No. 2 south crosscut (from ditto) 5 feet. Main shaft commenced and sunk 22 feet.—No. 8 level. An intermediate winze (B) commenced east of the east incline shaft, and sunk 32 feet. An intermediate winze (C) commenced west of the west incline shaft, and sunk 19 feet.—No. 9 level. The west drive continued 30 feet 6 inches. The east drive continued 20 feet.—No. 11 level. The west drive advanced 19 feet. Oriental Block. The Good Hope shaft was sunk 7 feet.—No. 3 level. No. 8 north crosscut made 22 feet; No. 9 north crosscut made 22 feet.—No. 4 level. No. 1 north crosscut made 30 feet.—No. 5 level. No. 1 north crosscut made 24 feet.—Nil Desperandum north blocks. The drive was continued 7 feet.—Annie's Fortune west blocks. The north drive from No. 1 shaft made 2 feet.—Stoper. The stopes continue to produce excellent ore, as will be seen by the returns of the past month. At this writing there seem no indication of their falling off. The underhand stopes below No. 6 level, round the incline shaft, is still supplying a good class of ore. From the No. 9 level back-stope is the richest ore of all.—Development. The main incline shaft has been sunk 23 feet below No. 7 level. This shaft will be carried down as rapidly as possible, and will eventually form the main hauling shaft. The development work has fallen off again this month, principally owing to scarcity of native labour. Every endeavour is being made to keep up the requisite number. We are sinking both the east and west incline shafts in fairly good ore; sometimes rich rock has been seen in the east shaft during the past week. We have also had some very rich ore in No. 11 level lately.

EAST HAND PROPRIETARY.—Dam. The work of doubling the capacity of the dam was practically, and everything is in order to conserve a large quantity of water when the rainy season sets in.—Borehole. No. 2 borehole in the Ouse and Cindrella blocks encountered a dyke, which necessitated the withdrawal of the drill.—Buildings. Plans are now being prepared for the erection of a number of necessary buildings for the eastern section.

NEW BLUES SKY.—The new north main incline shaft was sunk to a total depth of 70 feet, when sinking was suspended for the purpose of timbering.

ALAMILLOS.—Mine report dated December 4: In the 40 fathom level driving east of San Aguedas shaft the lode has slightly declined in value, and is now estimated at 2 tons per fathom. Good progress is being made with the driving of the 70 fathom crosscut north of San Felipe shaft. In the 55 west of Taylor's engine shaft the lode continues unproductive. In the 160 west of the same shaft nothing of value has been met with. The lode in the 103 east of Judd's engine shaft is strong, and has a kindly appearance, and is valued at $\frac{1}{2}$ ton per fathom. Sanz' winze sinking below the 80 fathom level the lode does not contain sufficient ore to value. The stopes continue to yield well. Surface works are going on with the greatest regularity, and the machinery is in good working order. Estimated raise for December 250 tons. The tributors returned 55 tons of mineral in the past month.

ANGULO.—St. Angelo shaft. East drift, 1st level, feet driven 52 feet, total distance from the crosscut 518 feet.—Assays. October 5, full width of reef 30 inches wide, value 5 dwts.; October 12, footwall section 15 inches wide, value 4 dwts.; hanging-wall section 30 inches wide, value 30 dwts.; October 18, full width of reef 30 inches wide, value 1 ounce 12 dwts.; October 26, full width of reef 30 inches wide, value 4 ounces 3 dwts.—South permanent main incline shaft. Feet sunk during the month 28 feet, total depth 230 feet. Owing to the prevailing scarcity of native labour all was temporarily suspended on No. 1 and 2 north permanent main incline shafts.

BATLEY'S REWARD.—Mining report dated Coolgardie, October 21: I beg to report for the week as follows:—Sylvester shaft. During the latter portion of the week the men have been making preparations for sinking which will be completed some part of the coming week, the work having, as yet, been done on the night shift only so as not to interfere with the other works. It taken longer than it otherwise would do, but as soon as completed sinking will be resumed with the full number of men.—South drive. South drive at the No. 5 level has been extended 10 feet, total from crosscut 225 feet, leaving about 50 feet to reach the south boundary. Since my last there is no particular change beyond a few small seams of quartz making in places throughout the formation, but up to the present nothing of any consequence.—North drive. With the north drive at the same level, but very little work has been done in consequence of requiring the men for other purposes.—100 feet level. 8 winze stopes continue to yield stone, which is being passed through the battery, but is apparently of rather poor quality, still must be taken on, as probably it will contain stone of better value in some part or other.—North stopes. No change to report since my last.—Begelhole shaft. The work of raising stone from this portion of the mine is still being continued at times showing a little fine gold.—Air shaft. Stopes at present average about 3 feet 6 inches wide, which I think is slightly better than the last time, but the work is the difficulty in keeping the cylinder cool with continuous working. It gets hot, and the water which is sent down to cool the power. If we can master this now the size of the driving wheel is decreased. I believe it will do its work, and I think it can be managed by fixing a small pump we have on the mine, and sending a larger quantity of water through the water jacket around the cylinder than at present passes through, also altering the outlet or discharge. We have also had great trouble in procuring water at times, not being able to obtain sufficient. This is owing to the Condis Company being a cage road in their shaft, and not being able to haul water until it is completed, which will take them fully this week, consequently all of this week, the same as the last, we shall have to depend on wherever it can be procured, and a full supply cannot be depended upon. I am in hopes after this week many of the troubles will be got over, and the works make better progress with the crushing.—Gold banked. I have today placed in the bank 75 ounces 8 dwts. of smelted gold, which will be dispatched by the next escort.—(Signed) W. H. Matthews.

BRITISH BROKEN HILL PROPRIETARY.—Mining managers report for the week ending October 30: Blackwood shaft, 300 level west crosscut extended 12 feet, total from plat 130 feet, with no change.—300 level. No. 1 winze in No. 1 west crosscut sunk 3 feet, total depth 31 feet, face unaltered in milling grade. Are cleaning out and bolting sulphide ore, stacked in timbers around No. 1 winze to surface, so that a northerly drive can be started to test lode. We hoisted 55 tons sulphide ore, averaging 21 per cent. lead, 14 ounces silver, and 35 per cent. zinc. North drive off long crosscut lengthened 4 feet, total 35 feet, face showing sulphides. We sorted out 10 tons, averaging 10 per cent. lead, 12 ounces silver, and 24 per cent. zinc. South drive off long crosscut driven 8 feet through splendid sulphide ore. We mined 34 tons, averaging 25 per cent. lead, 16 ounces silver, and 22 per cent. zinc.—H. well shaft, 30 level. West crosscut advanced 5 feet, total distance 147 feet, face unaltered. Sulphide lode over roof of east crosscut still being followed, but looks disturbed at present. We broke 30 tons sulphides, averaging 31 per cent. lead, 9 ounces silver, and 17 per cent. zinc.—200 level. South drive off No. 2 west crosscut driven 8 feet, total 28 feet, face still carrying good grade sulphide ore. We mined 22 tons, averaging 28 per cent. lead, 14 ounces silver, and 26 per cent. zinc. Have cleaned out No. 2 west crosscut, and extended same from timber 3 feet through excellent sulphides. We broke 19 tons sulphides, averaging 22 per cent. lead, 12 ounces silver, and 24 per cent. zinc.—Junction 300 level. North drive advanced 4 feet, total length 73 feet, face showing clean country rock.—Surface: Have finished ore flow around crusher. Excavations for foundations of new jig plant being pushed ahead, expect to start on work in connection with erection of large building in day or two.—Ore shipments. Forwarded 134½ tons (gross) sulphide ore to Block 11 Mine during week, but contents not available at present, as assays not agreed.—Weeks assays. Sulphide ore, lead from 5.5 to 40 per cent. zinc from 18 to 28 per cent. silver from 3.5 ounces to 19½ ounces per ton.

BATLEY'S REWARD. No. 1 SOUTH DRIVE.—Mining report dated Coolgardie, October 21: I beg to submit the following report:—170 feet level. During the week the north drive has been advanced 3 feet, the total now being 82 feet from shaft. Lode is 2 feet wide, of better quality stone than we have had in this drive for some time. The stone is at present showing gold when broken, I should estimate being payable. It was intended last week to continue the crosscut further, but it getting very hard it was discontinued for the time being.—150 feet level. The north drive has been extended 5 feet, total 49 feet from crosscut. No change in the character of the lode, which is about 2 feet wide. Have not seen any gold in this week.—Stoper. Stopes at the back of the 120 feet level continue to yield stone for the battery, lode being fully 1½ feet wide, gold being occasionally seen.—Crushing. During the week we have had great difficulty in keeping the battery employed, it being impossible at times to keep our obtain sufficient fresh water for the boiler, the condensers being rushed from all quarters we have been only able to obtain a limited quantity, and for 24 hours past had to suspend crushing, but, having obtained a small quantity, crushing has again been resumed.—(Signed) W. H. Matthews.

CAPE COPPER.—Captain Henwood, October 21: Oxpale. The stopes in the bottom of the 130 fathom level east of winze is yielding a little saving stuff. The rock in the 92 fathom crosscut (No. 13) south-west of main east level is favourable for progress, and at times it presents spots of copper ore. The ground in the 92 fathom level east of No. 19 level is still containing spots of copper ore. The rock in the drive in the back of the 58 fathom level south of stopes south-east of No. 15 winze is spotted with copper ore. The 58 fathom level south of old shaft is in massive quartz.—Captain Henwood, October 18: Trial Mine, Nabesheep shaft. The ground in the 58 fathom level south of No. 1 winze is still spotted with copper ore throughout, but the 74 fathom level yields a little saving stuff.—Copperberg. 10 fathom level west of which shafts yielding stones of copper ore but not to value. The rock in the two crosscuts north and south of west level for the present is poor. The ground in bottom of No. 2 trial shaft sinking below the 15 fathom level is unproductive.—Oxpale. The 50 fathom level west of crosscut level is yielding occasional spots of copper ore.—Returns for October. Oxpale 234½ tons of ore, 100 dwts. of gold, 105 tons of 28 per cent. Arrival at Swansea. The Cedar Branch with 2260 tons of ore and 875 tons of regulus.—Tilt Cove. East Mine. Output for October, 4885 tons of 37 per cent. wet assay.—Arrivals at Swansea. The (a) Duchess of Roxburgh with 3130 tons of ore, the (b) Annandale with 1540 tons of regulus, and the (c) Asterisk with 160 tons of regulus and 600 tons of ore.

DREIFONTAIN CONSOLIDATED.—Ramsey shaft, east drift, 1st level. Feet driven during month 25½; total distance from shaft 259 feet. Assays: October 12, footwall section 15 inches wide, value 2 ounces 7 dwts. Hanging-wall section 18 inches wide, value 10 dwts. October 25: Footwall section 15 inches wide, value 7 dwts.—West drift, 1st level: Feet driven during month 15½; total distance from shaft 230 feet. Assays: October 5: Footwall section 12 inches wide, value 35 dwts.—October 19: Footwall section 15 inches wide, value 11 dwts. Hanging-wall section 24 inches wide, value 11 dwts. No. 1 north permanent main incline shaft. Feet sunk during the month 32, total depth 100 feet.—No. 2 north permanent main incline shaft: Feet sunk during the month 28, total depth 137 feet.—South permanent main incline shaft: Feet sunk during the month 43, total depth 153 feet.

DOR PEDRO.—Maquina Mine. Half-monthly report, November 18: The mineral extracted has been chiefly derived from No. 6 shoot at the 50 fathom level, and although the tonnage has been rather small general work has been of fair quality. For this part of the month we have been crossing some old excavations, but under the old timbers payable mineral has been passed through. We are now crossing the last old workings and in a few days we hope to reach the virgin ground beyond any more old excavations.—60 north. At this place we have a very rich lode, but the ground is very wet and troublesome at present, which makes progress very slow, but if the ground improves good results will be obtained. This lode is now making very much north and going very far, with scarcely any dip east, which, if it continues, we shall have a much greater distance on the lode from the 60 to the 70 than we first anticipated, and a greater distance to drive at the 70 to cut the same.—70 fathom crosscut. This has been advanced for the month 11 feet, the ground is very treacherous in consequence of being so wet. We have now most of the mine water coming from this drive, which is now over 30 cubic feet per minute. The ground in the same nature as when last reported, being hard sandstone with some pebbles intermixed.—Drains from lines. A little has been done in the 60 from drainage off winze, and general work has improved and the lode has a better appearance than formerly.—Mine drainage. Water has increased to such an extent that our pumping power has more than it can manage with. We therefore, have occasionally to put on the hoisting power to help to fork water after changing bucket or any other temporary delay. To keep water in fork pumps have to go 6½ strokes per minute; six strokes per minute is full power. Running work throughout the mine has been attended to, and the shaft kept in good repair.

FURTHER REPORTS WILL BE SEEN ON PAGES 1633 AND 1538.